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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
08/236,933	05/02/1994	DONALD R. HUFFMAN	7913ZAZY	4115

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EXAMINER	
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ART UNIT	PAPER NUMBER
1795	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	08/236,933	HUFFMAN ET AL.	
	Examiner	Art Unit	
	SUSY N. TSANG FOSTER	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 September 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *45-49,51-84,96,181 and 203-248* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *46-49,84,204-214,217,219-231 and 234* is/are allowed.

6)☒ Claim(s) *51-82,96,203,215,216,232,233 and 235-248* is/are rejected.

7)☒ Claim(s) *45,83,181 and 218* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Declarations Pursuant to 37 CFR 1.132

1. This Office Action is responsive to the Declarations from Drs. Kroto, Terrones, and Darwish submitted under 37 CFR 1.132 on 7 September 2007. These declarations provide persuasive evidence that the instant application complies with the requirements of 35 U.S.C. 112, first paragraph regarding the term "macroscopic amount" in the instant claims. Although the original disclosure of the instant application does not provide ipsis verbis support for the term "macroscopic amount," the Terrones Declaration (reproducing the process of making the product) and the Darwish Declaration (purification of the product) clearly show production and extraction of a macroscopic amount of C_{60} and C_{70} following the same procedures described in the instant specification, specifically in Examples 1 and 2. These declarations provide evidence that the procedures described in the instant application inherently produce macroscopic amount of C_{60} and C_{70} and enable one of ordinary skill in the art to do so without undue experimentation.

Response to Amendment

2. Claims 45-49, 51-84, 96, 181, and 203-248 are pending in this application. Claims 45, 83, 181, and 218 are objected to. Claims 46-49, 84, 204-214, 217, 219-231, and 234 are allowed. Claims 51-82, 96, 203, 215, 216, 232, 233, and 235-248 are rejected for reasons given below.

Terminal Disclaimer

3. The terminal disclaimer filed on August 22, 2001 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of any patent granted on Application Serial No. 08/486,669 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Duplicate Claims

4. Based upon applicant's remarks throughout prosecution history in the instant application and in the copending application 07/580,246, the terms "solid", "macroscopic amounts", "amounts sufficient to be capable of providing a visibly colored solution when extracted with benzene", and "discernible solid" are considered equivalent when referring to the amount of C_{60} produced.

For example, in applicant's appeal brief filed on May 9, 2001, applicant states the following on pages 18-19:

> " ...if the C_{60} product were prepared in macroscopic amounts, the C_{60} would be in sufficient quantity to be seen and perceived as a solid. Thus, the meaning of 'solid' in Claim 181, especially when read in light of the specification is clear; sufficient product is formed so that it is perceived as a solid."

From this statement on pages 18-19, applicant is equating the term "solid" to mean "macroscopic amounts."

In the same appeal brief, applicant states the following on page 23:

> "...the benzene became colored and the product produced after extraction with the non-polar solvent is colored. Obviously, one cannot determine these characteristics unless it is present in amounts that can be seen with the naked eye, i.e., macroscopic amounts. For example, if less than macroscopic amounts were produced, then no color would be seen. See, Curl, et al., Scientific American 1991, 54-55."

From this statement on page 23, applicant is equating "macroscopic amounts" to "a colored benzene solution."

Furthermore, in applicant's appeal brief filed on March 10, 2005 in copending application 07/580,246, applicant states the following on page 36:

> "Moreover, applicants respectfully submit that the Kroto, et al. article is non-enabling to make fullerenes, e.g., C_{60} or C_{70} in macroscopic amounts or language equivalent thereto, e.g., solid form, as a solid, in macroscopic amounts or in equivalent language."

Page 35 of the same appeal brief filed on March 10, 2005 in copending application 07/580,246 also states:

> "Thus, Curl, et al., on commenting about the experiments described in Kroto, et al. admit that they could not make enough to collect the fullerenes as a solid or in solid form or in macroscopic amounts or equivalent language thereto."

From these statements in the appeal brief filed on March 10, 2005 in the copending application, applicant admits that the terms "solid", "in solid form", and "in macroscopic amounts" are equivalent language when referring to the amount of C_{60} produced.

In applicant's response filed on January 11, 1999 in the instant application, applicant states the following on page 6:

> "The term 'discernible' is not an ambiguous term but connotes that the product is capable of being detected with the eyes or other senses."

From this statement on page 6, applicant is equating the term "discernible" in the claims to mean "macroscopic" because the ordinary meaning of "macroscopic" describes objects that are visible to the naked eye. According to Hackh's Chemical Dictionary, 400 (4th ed. 1969) (copy attached), the term "macroscopic" is defined as, "Describing objects visible to the naked eye. Cf. *microscopic.*" Similarly, The American Heritage Dictionary of the English Language, 781 (William Morris ed., New College ed. 1976) (copy attached), defines "macroscopic" as:

1. Large enough to be perceived or examined without instrumentation, especially as by the unaided eye. 2. Pertaining to observations made without magnifying instruments, especially as by the unaided eye.

Finally, in applicant's request for reconsideration of the BPAI Decision filed on May 31, 2005 in the instant application, applicant states the following on page 6:

> "Thus, a competitor of the present inventors had correlated the colored solution of benzene containing the fullerenes, e.g., the C_{60}, product with 'visible amounts', i.e., macroscopic amounts of same. Moreover, inasmuch as the benzene solution was colored, it meant to one of ordinary skill in the art that macroscopic amounts of fullerenes e.g., C_{60} were present in the colored benzene solution described in the instant application."

From this statement on page 6, applicant is equating the term "colored solution of benzene" to mean "macroscopic amounts of C_{60}" present in the colored benzene solution.

In light of applicant's remarks above, the following claims are objected to as being duplicate claims:

Claim 181 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 46. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim 232 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 84. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Applicant is advised that should claim 45 be found allowable, claim 83 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Applicant is advised that should claim 56 be found allowable, claim 57 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Additional Claim Objections

5. Claims 45 and 218 are objected to because of the following informalities:

In claim 45, the term "solid form" in the limitation "in amounts capable of extracting therefrom said C_{60} in macroscopic amounts and in solid form" is redundant since the term "macroscopic amounts" and "solid form" are equivalent language used to describe amounts of C_{60} as discussed above.

In claim 218, the limitation "and is additionally present in the carbon product" appears to be redundant. Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 51-82, 96, 203, 215, 216, 232, 233, and 235-248 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 75 recites the limitation "the collecting substrate". There is insufficient antecedent basis for this limitation in the claim.

Claim 215 recites the limitation "the situs of vaporization". There is insufficient antecedent basis for this limitation in the claim.

Claim 232 recites the limitation "said situs of vaporization". There is insufficient antecedent basis for this limitation in the claim.

In claim 96, the limitation "on a collecting surface distanced 5-10 cm from said vaporization" is indefinite because it is unclear whether the collecting surface is the same collecting surface recited in claim 232.

Claim 233 recites the limitation "said situs of vaporization". There is insufficient antecedent basis for this limitation in the claim.

Claim 245 recites the limitation "the pressure of the vaporization". There is insufficient antecedent basis for this limitation in the claim. Claim 233 or 234 recites pressure of the inert quenching gas, not the pressure of the vaporization.

Claims depending on claims rejected under 35 USC 112, second paragraph are also rejected for the same.

Allowable Subject Matter

8. Claims 46-49, 84, 204-214, 217, 219-231, and 234 are allowed.

9. Claims 51-56, 58-82, 96, 203, 215, 216, 233, and 235-248 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

10. Claims 45 and 218 would be allowable if the above objection is addressed.

11. The following is a statement of reasons for the indication of allowable subject matter: Kappler et al. (J. Appl. Phys. 50 (1), 1979, pp. 308-316) and J. Lefevre ("Investigation of Iron and Carbon Dusts," Annales D'Astrophysique, Vol. 30, No. 4, pp. 731-738, 1967) both disclose vaporizing a carbon source in the presence of an inert quenching gas but does not disclose, teach, or suggest separating or extracting C_{60} from the sooty carbon product produced.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Howard et al. (US Patent No. 5,273,729 A) disclose synthesizing macroscopic amounts of fullerene using the flame method.

Smalley et al. (US Patent No. 5,227,038) disclose that fullerene is formed at 10 to 500 amps at 10 to 50 volts (col. 4, lines 18-21) and the pressure needed ranges from 1 to 20,000 torr, preferably 5 to 2000 torr and preferably 50 to 500 torr of helium (col. 5, lines 3-8).

13. Any inquiry concerning this communication or earlier communications should be directed to examiner Susy Tsang-Foster whose telephone number is (571) 272-1293. The examiner can normally be reached on Monday through Friday from 9:30 AM to 6:00 PM.

The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

st/

/Susy Tsang-Foster/
Supervisory Patent Examiner, Art Unit 1795